CLAIMS

We claim:

1. A method comprising:

configuring a virtualization layer to interface between a host and at least one storage device, wherein the virtualization layer defines at least one virtual volume comprising objects defining a mapping to data in the at least one storage device;

storing information about a state of the at least one storage device in a virtualization database that is distributed across more than one processor in a the virtualization layer;

establishing a state manager for each of the more than one processors, wherein the state manager monitors the state of the at least one storage device;

issuing a quiescence instruction to the state manager for each of the more than one processors; and

responsive to receiving a quiescence instruction by the state manager,

completing short term operations underway at the time the quiescence instruction is received, and

halting long term operations underway at the time the quiescence instruction is received.

2. The method of claim 1, further comprising:

issuing the quiescence instruction when a storage device fails.

3. The method of claim 1, further comprising:

issuing the quiescence instruction when a processor fails.

4. The method of claim 1, further comprising:

receiving notification from the state managers when short term operations are completed and long term operations are halted.

5. The method of claim 1, wherein the short term operations include at least one of: a read operation and a write operation.

6. The method of claim 1, wherein the long term operations include at least one of: rebuilding a virtual volume and scrubbing a virtual volume.

7. The method of claim 4, further comprising:

reconfiguring the virtualization layer after the notification has been received from the state managers.

8. The method of claim 7, wherein the configuring layer does not interface with a device that has failed.

9. A system comprising:

a plurality of storage devices storing data corresponding to a host;

a virtualization layer between the host and the plurality of storage devices, the virtualization layer comprising objects defining a mapping to data in the plurality of storage devices;

a virtualization database storing information about a state of each of the plurality of storage devices;

a plurality of processors, each processor having a state manager that monitors the state of at least one storage device corresponding to the processor, receives a quiescence instruction in response to a change in the state of one of the plurality of storage devices, and, responsive to receiving the quiescence instruction, completes short term operations underway at the time the quiescence instruction is received and halts long term operations underway at the time the quiescence instruction is received.

10. The system of claim 9, further comprising:

a master one of the plurality of processors that issues the quiescence instruction in response to a failure of one of the plurality of storage devices.

11. The system of claim 10, wherein each processor's state manager further notifies the master processor when short term operations are complete and long term operations are halted.

12. The system of claim 11, wherein the master processor further reconfigures the virtualization layer after notification is received from each processor's state manager that short term operations are complete and long term operations are halted.

13. The system of claim 9, wherein the virtualization database is distributed across more than one processor in the virtualization layer.

14. A system for dynamically updating storage associated with a host, comprising:

means for configuring a virtualization layer to interface between the host and at least one storage device wherein the virtualization layer defines at least one virtual volume comprising objects defining a mapping to data in the at least one storage device;

means for storing information about a state of a storage device corresponding to the host in a virtualization database;

means for receiving data about a new state of the storage device corresponding to the host;

means for updating the virtualization database with the data about the new state of the storage device; and

means for updating the mapping contained in the objects comprising the virtual volume based on the data about the new state of the storage device.

15. The system of claim 14, wherein the virtualization database is distributed across more than one processor in the virtualization layer.

16. The system of claim 14, wherein the new state of the storage device is responsive to the storage device becoming available.

17. The system of claim 14, wherein the new state of the storage device is responsive to the storage device becoming unavailable.

18. The system of claim 17, further comprising:

means for reconfiguring the virtualization layer after the mapping has been updated, wherein the reconfigured virtualization layer does not interface with the unavailable storage device.

19. The system of claim 16, further comprising:

means for reconfiguring the virtualization layer after the mapping has been updated, wherein the reconfigured virtualization layer interfaces with the available storage device.

20. A computer-readable medium containing code for directing a processor to perform a method for dynamically updating storage associated with a host, the method comprising:

configuring a virtualization layer to interface between the host and at least one storage device wherein the virtualization layer defines at least one virtual volume comprising objects defining a mapping to data in the at least one storage device;

storing information about a state of a storage device corresponding to the host in a virtualization database;

receiving data about a new state of the storage device corresponding to the host;

updating the virtualization database with the data about the new state of the storage device; and

updating the mapping contained in the objects comprising the virtual volume based on the data about the new state of the storage device.

21. The computer-readable medium of claim 20, wherein the virtualization database is distributed across more than one processor in the virtualization layer

22. The computer-readable medium of claim 20, wherein the new state of the storage device is responsive to the storage device becoming available.

23. The computer-readable medium of claim 20, wherein the new state of the storage device is responsive to the storage device becoming unavailable.

24. The computer-readable medium of claim 23, the method further comprising:

reconfiguring the virtualization layer after the mapping has been updated, wherein the reconfigured virtualization layer does not interface with the unavailable storage device.

25. The computer-readable medium of claim 22, the method further comprising:

reconfiguring the virtualization layer after the mapping has been updated, wherein the reconfigured virtualization layer interfaces with the available storage device.